

# West Valley Demonstration Project

Doc. ID Number	WVDP-516
Revision Number	0
Revision Date	09/14/2010

## NORTH PLATEAU PERMEABLE TREATMENT WALL PROTECTION AND BEST MANAGEMENT PLAN

**Cognizant Author:** Linda M. Michalczak

**Cognizant Manager** Charles A. Biedermann

**Facility Manager:** James J. Baker

West Valley Demonstration Project



**WVES LLC**

West Valley Environmental Services LLC  
10282 Rock Springs Road  
West Valley, New York USA 14171-9799

TABLE OF CONTENTS

1.0 INTRODUCTION .....3

2.0 BACKGROUND .....3

3.0 PROTECTION MEASURES .....3

    3.1 Storm Water Management.....3

    3.2 Physical Protection .....3

4.0 BEST MANAGEMENT PRACTICES.....4

5.0 INSPECTION AND MAINTENANCE.....4

6.0 REFERENCES .....4

## 1.0 INTRODUCTION

West Valley Environmental Services, LLC (WVES) was directed by the U.S. Department of Energy to mitigate the spread of Strontium-90 (Sr-90) affected groundwater beneath the North Plateau at the West Valley Demonstration Project located in West Valley, New York. A permeable treatment wall (PTW) was selected to mitigate the migration of Sr-90 affected groundwater along an alignment located north of the main plant facility and hydraulically downgradient of the area of greatest groundwater impact. This PTW Protection and Best Management Plan (Plan), as prepared by AMEC Geomatrix, Inc. (AMEC) under contract to WVES, discusses:

1. Measures that that will be implemented during construction of the PTW to protect the physical integrity of the PTW and a program for monitoring and maintaining those protection measures over the operational lifetime of the PTW; and
2. Best management practices intended to increase the longevity and effectiveness of the PTW system.

## 2.0 BACKGROUND

The groundwater remediation system selected to mitigate the migration of Sr-90 affected groundwater consists of an approximately 860-foot (ft) long hydraulically passive PTW composed of granular zeolite. The alignment selected for the PTW is located north of the main plant facility and hydraulically downgradient of the area of greatest groundwater impact by Sr-90. The functionality of the PTW system is based on the capacity of the zeolite to preferentially sorb Sr-90 cations, displacing other cations on the molecular structure of the mineral through an ion exchange process. Although Sr-90 (a divalent cation) in site groundwater will be exchanged for monovalent cations (such as sodium and potassium) within the zeolite structure, naturally occurring divalent cations (such as calcium and magnesium) also will compete for these sites.

The PTW will be constructed primarily along the existing North Lagoon Access Road. Sections of the PTW alignment that do not follow the existing road will be filled and improved to maintain the PTW design grades. The platform that follows the PTW alignment will hereinafter be referred to as the 'installation platform'. After construction of the PTW, the installation platform will remain in place; however, it will no longer be accessed by normal site vehicle traffic. Maintenance of the installation platform following construction will serve as an added protection measure for the PTW. A new road being constructed south of the PTW to facilitate the installation of the PTW will remain in place after the PTW is installed and is subject to the restrictions identified herein.

## 3.0 PROTECTION MEASURES

### 3.1 Storm Water Management

During the PTW design process, the existing storm water drainage system for the facility was reviewed to evaluate the potential for non-target loading of the PTW with infiltrating storm water runoff. Infiltration of storm water runoff upgradient of the PTW could lead to increased mass loading of competing cations (magnesium, calcium) that could reduce the effectiveness of the PTW for treating Sr-90. The area considered for construction of the PTW also is characterized by high groundwater levels close to the ground surface (i.e., 1 to 3 feet below ground surface). Routing of storm water runoff away from the PTW area would decrease the likelihood of non-target cation loading and flooding in the PTW area. Improved storm water management in the vicinity of the PTW would substantially reduce the potential that erosion of the installation platform will occur to a degree that negatively impacts PTW performance. As such, a lined storm water swale (Smart-Ditch™) will be constructed south of the PTW to intercept storm water from upland portions of the site prior to reaching the PTW area and routing it towards Franks Creek. Additional details related to water management and associated improvements are included in the final design package and discussed in the associated subcontractor request-for-proposals. Upon completion of the installation of the PTW, final as-built drawings and an installation report will be generated.

### 3.2 Physical Protection

Physical protection measures will be implemented during PTW construction with the intent of eliminating or making negligible the potential for inadvertent excavation into the PTW at a future date.

Protection of the installation platform following construction of the PTW will serve as an added protection measure for the PTW. The following physical protection measures will be implemented:

- Buried warning tape will be overlain on top of the PTW at a depth of one to two feet below grade. The warning tape will alert construction workers to the presence of the PTW in the event that excavation activities are initiated in the vicinity of the PTW at a later date.
- Signage will be installed in the vicinity of the PTW as an additional means of alerting construction workers to the presence of the PTW.

A network of performance monitoring wells will be installed on the installation platform following construction of the PTW (see WVDP-512, North Plateau Permeable Treatment Wall Performance Monitoring Plan, for well locations). Wells will be completed with “stick-up” protective outer casings so the wells can be more easily located during the winter months. The stick-up casings will inhibit vehicle traffic on the installation platform and serve as an additional warning mechanism for inadvertent excavation into the installation platform.

#### 4.0 BEST MANAGEMENT PRACTICES

The following best management practices are intended to prevent reductions in PTW longevity and effectiveness resulting from ordinary site practices:

- The use of road salt in the vicinity of the PTW will be eliminated or substantially restricted in its application. The infiltration of road salt components could result in an increase in dissolved non-target cations in groundwater that could compete for sorption sites with Sr-90, potentially reducing the long-term effectiveness of the PTW. Restricting the use of road salt in the vicinity of the PTW will minimize the potential for introducing non-target cations to the groundwater upgradient of the PTW. Figure 1 identifies the area in which road salt will not be used, unless in the case of an emergency. Included in the road salt exclusion zone is the new access road constructed upgradient/south of the PTW. Signs will be maintained at access points to identify that road salt should not be used in the exclusion zone.
- Calcareous road base or fill (composed of, containing, or characteristic of calcium carbonate, calcium, or limestone; chalky) will not be placed in the vicinity of the PTW. Placement of calcareous materials in the vicinity of the PTW (Figure 1) could lead to the introduction of non-target cations to groundwater. These non-target cations could compete for sorption sites with Sr-90, potentially reducing the long-term effectiveness of the PTW. Signs will be maintained at the exclusion zone boundary to identify that calcareous road base or fill should not be used in the area.
- Detailed As-Builts of the PTW system will be maintained onsite. Referencing these As-Builts in the event that subsurface excavations are conducted in the vicinity of the PTW at a future date will help minimize the potential for inadvertently excavating into the PTW.

#### 5.0 INSPECTION AND MAINTENANCE

Visual inspections of the PTW system, including storm water infrastructure and installation platform protection measures, will be conducted during performance monitoring events in accordance with WVDP-512. Inspection results and any repairs or maintenance conducted as a result of the inspections will be documented in PTW performance monitoring reports per WVDP-512.

#### 6.0 REFERENCES

AMEC Geomatrix, Inc. (AMEC), 2009, West Valley 30% Design Report, North Plateau Permeable Treatment Wall, prepared for West Valley Environmental Services, LLC, October 2009.

AMEC Geomatrix, Inc. (AMEC), 2010, Final Design Submittal, North Plateau Permeable Treatment Wall, prepared for West Valley Environmental Services, LLC, May 2010.

WVES Request for Proposal (RFP) No.003180, North Plateau Permeable Treatment Wall Installation Site Preparation Subcontract (with most recent addendum)

WVDP-52, North Plateau Permeable Treatment Wall Performance Monitoring Plan (most recent revision)

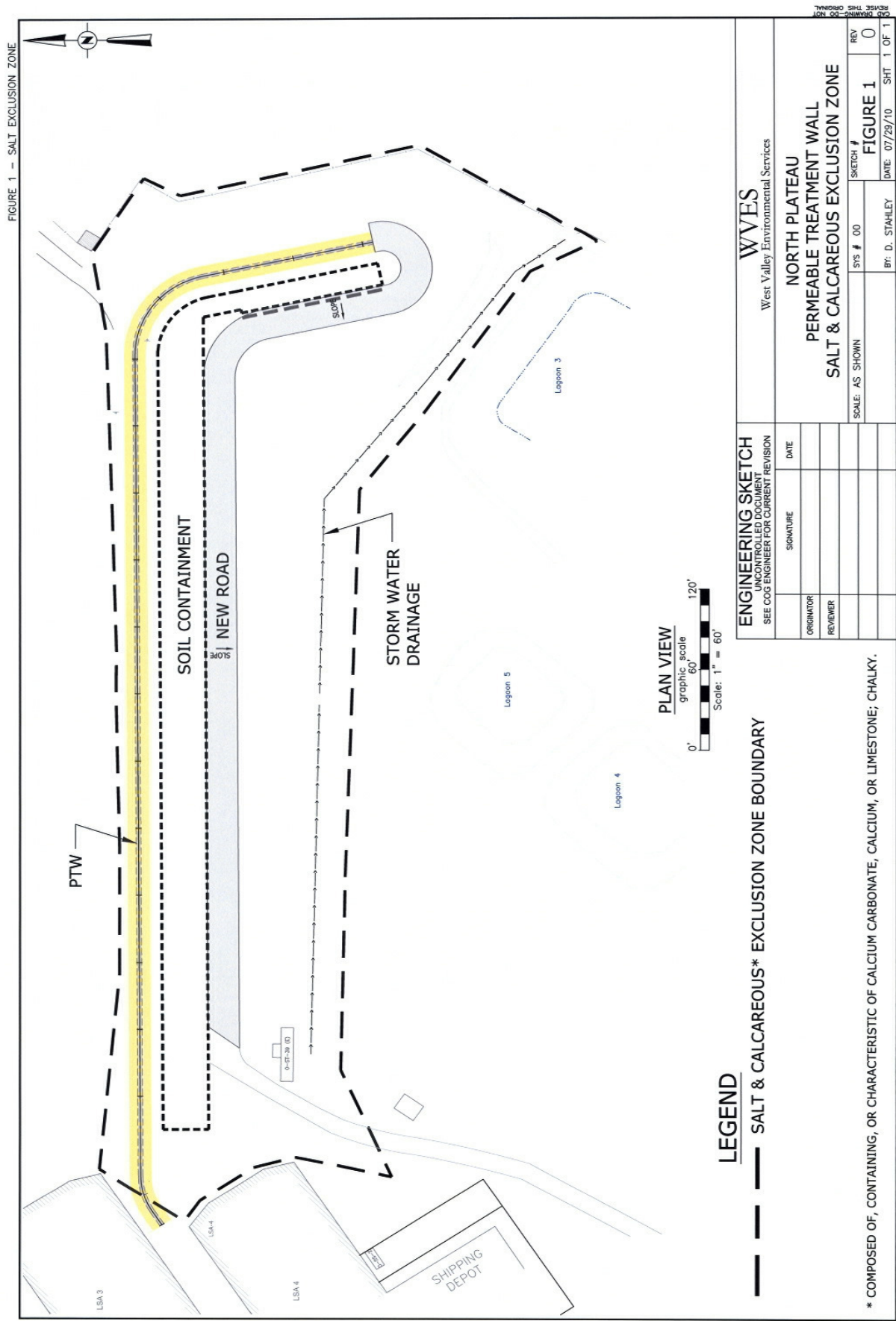


Figure 1

WVDP RECORD OF REVISION

Rev. No.	Description of Changes	Revision On Page(s)	Dated
0	Original Issue	All	09/14/10